

**Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, D.C. 20554**

In the Matter of

Application by BellSouth Corporation,  
BellSouth Telecommunications, Inc., and  
BellSouth Long Distance, Inc., for  
Provision of In-Region, InterLATA  
Services in Louisiana

CC Docket No. 97-231

To: The Commission

**REPLY BRIEF IN SUPPORT OF APPLICATION BY BELLSOUTH FOR  
PROVISION OF IN-REGION, INTERLATA SERVICES IN LOUISIANA**

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**APPENDIX**

**BELLSOUTH  
LOUISIANA § 271 REPLY**

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**REPLY AFFIDAVIT OF ANIRUDDHA BANERJEE, PH.D.**  
**ON BEHALF OF BELL SOUTH CORPORATION**  
**CC DOCKET No. 97-231**  
**DECEMBER 19, 1997**

**I. INTRODUCTION AND PURPOSE**

1. I am Aniruddha Banerjee, a Senior Consultant at the National Economic Research Associates, Inc., in Cambridge, Massachusetts. I filed an affidavit on November 6, 1997, on behalf of BellSouth Corporation in CC Docket No. 97-231.<sup>1</sup> Attached to that affidavit was a study called *Competitive Analysis of PCS Offerings in the New Orleans Area*, in which I had analyzed the likely impacts of PCS service plans offered by Sprint PCS and PrimeCo on BellSouth's local customers in the New Orleans metropolitan area.

2. Professor Carl Shapiro<sup>2</sup> and Sprint<sup>3</sup> (relying on Professor Shapiro's analysis) have raised several objections to my earlier analysis.<sup>4</sup> Separately, Professors R. Glenn Hubbard and William H. Lehr<sup>5</sup> have sought several clarifications about my earlier analysis. The purpose of this reply affidavit is to correct several misconceptions and errors that underlie those objections and to provide additional insight into my analysis. The specific issues to which I respond include:

- a) The contention that because Sprint and other PCS providers *do not intend* to offer PCS as a replacement for traditional wireline service, consumers cannot possibly regard PCS

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<sup>1</sup> *In the Matter of Application by BellSouth Corporation, BellSouth Telecommunications, Inc., and BellSouth Long Distance, Inc., for Provision of In-Region, InterLATA Services in Louisiana.*

<sup>2</sup> Declaration of Carl Shapiro, on behalf of Sprint in this docket, especially at 4-15.

<sup>3</sup> Petition to Deny of Sprint Communications Company L.P. in this docket, November 25, 1997, especially at 11-15.

<sup>4</sup> All references to my earlier analysis are, as noted above, to the study attached to my affidavit of November 6, 1997.

<sup>5</sup> Affidavit of R. Glenn Hubbard and William H. Lehr, on behalf of AT&T Corporation in this docket, especially at 39-41.

as a "true substitute" for BellSouth's wireline service. (Shapiro, at 5).

- b) The claim that PCS does relatively little to enhance consumer choice and move retail rates toward cost. (Shapiro, at 5)
- c) The attempted demonstration that BellSouth's wireline prices are almost always better (lower) than those of comparable Sprint and PrimeCo PCS offerings and, therefore, the PCS alternatives cannot yet compete on price. (Shapiro, at 10-11, especially Table 1, and Sprint, at 11).
- d) The depiction of an "average customer" as making 1627 minutes of local calls and 123 minutes of intraLATA toll calls per month. (Shapiro, at 13).
- e) The position that the cost of a PCS handset is significant enough to act as a "barrier to switching" by consumers from wireline to PCS services. (Shapiro, at 14. Also, Hubbard and Lehr, at 40).
- f) The position that exclusion of interLATA minutes from the price comparisons in my earlier analysis seriously understates actual PCS prices to the consumer. (Shapiro, at 14-15).

## II. SUMMARY OF CONCLUSIONS

- 3. My reply affidavit establishes the following:
  - A. PCS is already a viable substitute for wireline local service for an emerging segment of BellSouth's wireline customers. Contrary to claims by Professor Shapiro and Sprint, PCS is both a functional and an economic substitute. In fact, up to 7.3 percent of BellSouth's wireline customers could already consider switching to PCS service. As aggressive recent deployment and pricing plans in the New Orleans metro area reveal, PCS service is already past being price-competitive with analog cellular service and is taking aim at wireline services offered by BellSouth.
  - B. While several factors, not just price, can influence a consumer's choice between wireline or PCS service, the purpose of my earlier analysis was to determine what percent of BellSouth's present wireline customers could consider switching to a PCS alternative on the basis of price alone. Contrary to Professor Shapiro's interpretation of my effort, my approach was to compare the consumer's cost of purchasing the same combination of local, intraLATA toll, and vertical services under existing wireline and alternative PCS pricing plans. Under that approach, up to 7.3 percent of BellSouth's wireline customers could consider switching to a Sprint PCS plan.

- C. Professor Shapiro's counter-examples about possible switching behavior are based on fundamentally flawed estimates of average consumer usage of local and intraLATA toll services. Professor Shapiro's average (i) does not distinguish between residential and business usage and is consequently seriously biased upward for a residential consumer, (ii) confuses standalone averages with conditional averages for consumers that make several types of calls, and (iii) does not properly reflect the highly skewed pattern of usage (particularly of intraLATA toll) among residential consumers. For example, he estimates the average number of local minutes per month in Louisiana to be 1627. Since my analysis only concerns *residential* usage, the correct number as estimated by BellSouth is around 666 minutes. Clearly, Professor Shapiro's average is seriously overstated.
- D. Professor Shapiro's insistence that the cost of a PCS handset be factored into the price comparisons is ill-advised. The cost of a handset, being sunk, cannot influence actual customer usage of wireline or PCS services. Given the magnitude of handset prices today and in the foreseeable future, price comparisons are properly conducted using prices for the *usage* components of wireline and PCS services. At any rate, if the sunk cost of a PCS handset has to be factored into the analysis, then so must the sunk costs associated with wireline service.
- E. Professor Shapiro's call for inclusion of interLATA toll minutes in the price comparisons is misplaced. He fails to account for the fact that interLATA services are *not* yet the province of a local carrier like BellSouth and that LATA-based service distinctions do not apply to the PCS provider whose home service area may be larger than a wireline carrier's local calling area, extended local calling area, or even cross LATA boundaries. For these reasons, it is more prudent to confine the comparison to broadly comparable services that both the local wireline carrier and a PCS provider could provide. Also, inclusion of interLATA toll minutes could, in certain circumstances, actually tilt consumer choice in favor of PCS service.

### III. RESPONSE TO PROFESSOR SHAPIRO AND SPRINT

#### A. PCS is a Viable Substitute for Wireline Local Service

4. Professor Shapiro and Sprint contend that (i) PCS is being provided in Louisiana only in competition to *cellular*, not wireline, service and, therefore, cannot be regarded as a "true substitute for wireline service" and (ii) PCS remains "significantly more expensive" than BellSouth's wireline local service for all but "a very small portion of customers in the local exchange market." (Shapiro, at 5) Essentially, his position (also adopted by Sprint, at 15) is

that it is premature, if not incorrect, to regard PCS as a viable substitute for BellSouth's wireline local service.

5. I disagree with this position for two reasons. First, it is of no consequence for the issue at hand that PCS is *marketed* in Louisiana principally as a competitor to cellular service. The fact that PrimeCo and Sprint have both advertised PCS as a replacement for cellular service (Shapiro, at 6) cannot undo one important reality: that wireline, cellular, and PCS services are *all* alternative means of serving local telecommunications needs and are, therefore, substitutes at some level for consumers asked to choose among them. It would be absurd to think that cellular and PCS somehow address communications needs that never overlap with those met by traditional wireline services. The advantage of mobility of cellular and PCS services over wireline service may mean that some consumers would use cellular or PCS services when in transit or away from wireline telephone locations, even though they would resort back to wireline service whenever such service was accessible. In that limited sense, it would appear that wireline and wireless options could play a complementary role to suit a consumer's status (whether static or mobile). However, since they are indisputably near-perfect *functional* or technological alternatives for each other (i.e., each could carry local and long distance calls), the option clearly remains with the consumer to treat them as substitutes.<sup>6</sup>

6. Second, substitution behavior is driven not merely by functional similarities but also by relative prices. When two products are *potentially* substitutes (from a functional point of view) but their prices are not comparable or mutually competitive, we may expect consumers to choose the relatively less expensive product over the relatively more expensive product, other things being the same. However, as their prices become increasingly mutually competitive, consumers may feel more inclined to treat the two products as substitutes. The relevant point for present purposes is not whether wireless and wireline services are marketed to serve different market niches, but whether their prices have converged sufficiently for them to

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<sup>6</sup> There are several examples in modern life where items or products that are, effectively, functional substitutes are not marketed in direct competition with each other and, in some instances, may even be used in a complementary manner. These examples include, among others, fax and e-mail, or books and electronic storage media.

become, in effect, substitutes for some significant number of consumers. The point of my earlier analysis was to demonstrate that PCS offerings in Louisiana, *on a price basis alone*, represent for a segment of consumers feasible substitutes for *comparable* wireline local and intraLATA toll services offered by BellSouth. The rapid drop in PCS prices since the pricing plans analyzed in my study were first published only reinforces my belief that PCS will be seen increasingly by the *residential consumer* as a viable substitute (from the standpoint of both functionality and price) for wireline local and intraLATA toll services.

7. Specifically, in response to comments in this proceeding, I expanded my earlier analysis by using the local and intraLATA toll calling data set out in the accompanying Appendix.<sup>7</sup> This further analysis shows that, based on the PrimeCo and Sprint PCS plans then considered, between 1.4 and 4.0 percent of BellSouth wireline customers could consider switching. The more aggressive PCS pricing plans currently being offered can only increase the probability of such switching. For example, Sprint PCS' 180 minute calling plan allows up to 180 minutes of calling for a fixed monthly fee of \$30, and all subsequent minutes are charged 30¢ each. Under this plan, BellSouth customers with up to 130 O&I local minutes and 100 O&I intraLATA toll minutes (and five vertical services) would find the Sprint PCS 180 minute calling plan equally or less expensive and could consider switching to it.<sup>8</sup> My analysis shows that those customers could be up to 7.3 percent of BellSouth wireline customers. The following table summarizes my findings about potential switching probabilities under different PCS plans.

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<sup>7</sup> Based upon information provided by BellSouth, I have constructed a joint distribution of local and intraLATA toll calling for these data, as an approximation to the actual call distribution.

<sup>8</sup> The consumer's monthly cost of this combination of local and intraLATA toll, when priced out under Sprint PCS' 180 minute plan, is \$45, the same as the cost of BellSouth's Complete Choice plus Area Plus plan. While from this point on the wireline option will be preferred, at lower usage levels (i.e., below 230 combined local and toll minutes) the PCS option will be cheaper.

PCS Plan	Range of Switching Probabilities
PrimeCo May-June '97 promotion, PrimeCo July '97 promotion	1.4%-4.0%
PrimeCo Clear Choice 1, PrimeCo Clear Choice 100	1.4%-2.0%
Sprint PCS 10 Minutes, Sprint PCS 60 Minutes	1.3%-1.9%
Sprint PCS 180 Minutes	7.3%

8. My earlier analysis focused only on customer choices among *residential* wireless and PCS service offerings. It is well known that BellSouth's rates for comparable wireline *business* local exchange service are generally higher than those for residential local exchange service. Hence, we may expect PCS alternatives to compete even more strongly for BellSouth's wireline business customers than they do for residential customers. Both Sprint and PrimeCo have specific corporate or business PCS offerings in the New Orleans area.

9. Ironically, Professor Shapiro does not completely dismiss the possibility that PCS can be a substitute for wireline service; he just doesn't believe that it is a "close" substitute yet. For example, he concedes that "over time PCS may indeed prove itself to be a viable direct competitor to wireline local service." (Shapiro, at 8) He appears thereby to suggest that, at least in time, PCS can be both a functional and economic substitute for wireline service.

#### B. PCS is Expanding Consumer Choice and Moving Retail Rates Toward Cost

10. Professor Shapiro claims that "PCS 'competition' does relatively little to enhance consumer choice or drive retail rates towards cost." (Shapiro, at 5) Assessing such a claim is difficult because it is not based on real data. First, beyond stating that PCS in Louisiana is presently not a "practical economic alternative" to BellSouth's wireline local service, Professor Shapiro offers little to support the notion that PCS does not enhance or expand consumer choice. PCS offers much that is new and, therefore, *does* expand consumer choice. For example, it offers digital sound quality that is clearer and more reliable than that of analog cellular service and, therefore, positions PCS closer (from a *usefulness* standpoint) to conventional wireline service than Professor Shapiro acknowledges. Furthermore, the

convenience of mobility, home service areas that are at least as large as BellSouth's extended local calling areas,<sup>9</sup> and most importantly, the ability to provide one-stop-shopping experiences to consumers by bundling local, long distance, and vertical services, all add up to a form of expanded consumer choice that existing wireline services can do little to emulate.

11. Second, in the absence of reliable information on where PCS and cellular prices stand relative to their costs, it is hard to evaluate Professor Shapiro's statement. It is possible, however, to infer from the systematic decline in PCS prices (first through promotional pricing plans and then through regular offers) that PCS providers at least are moving their prices closer to cost in order to make their service more competitive. In fact, there is evidence that PCS service is already past being price-competitive with analog cellular service and is taking aim at wireline services offered by BellSouth.

12. For example, Sprint PCS has advertised plans in Louisiana that offer PCS service for as low as 10¢ a minute (for up to 800 incoming and outgoing local and toll minutes in a recent plan<sup>10</sup>). In contrast, in the New Orleans area, BellSouth Mobility's analog cellular service is available under several pricing plans, of which the least expensive *per minute* (Advantage Talk 2000) includes 2000 local minutes for a monthly fee of \$399.95 (or, about 20¢ a minute). Similarly, a competitive cellular provider in New Orleans, Radiofone, charges \$299 a month for 1050 local minutes (or, over 28¢ a minute). Those rates—the lowest on a per-minute basis offered by New Orleans area cellular carriers—are considerably higher than the 10¢ a minute rate that current Sprint PCS plans are offering. What is more, the level of usage needed to qualify for Sprint PCS' 10¢ per minute rate is considerably lower than those needed to qualify for the cheapest (on a per-minute basis) cellular plans. The significant fact that emerges is that

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<sup>9</sup> As I pointed out in my earlier analysis, this seems to be the case in the New Orleans metro area.

<sup>10</sup> Promotional plan offered between November 3, 1997, and January 11, 1998, in Louisiana. Sprint PCS has unveiled similar plans in Louisiana that effectively charge 10¢ per minute of use, e.g., the "10 Cents a Minute Until the Year 2000" plan which charges \$50 monthly for up to 500 minutes of local airtime (and 10¢ for each additional minute), and the "600 Minutes for \$60" and "400 Minutes for \$40" plans, each of which splits the number of allowed minutes equally between peak and off-peak use.

current PCS rates actually compare favorably with those for *wireline* local and intraLATA toll services for significant customer groups.

**C. PCS Prices, Even Now, are Competitive for Certain Customers of BellSouth's Wireline Service**

13. As recognized by Professor Shapiro, it is true that under the PCS plans considered in my earlier analysis the probability of switching is generally low (and confined mostly to "low local, low toll" customers) if *price* alone is the basis for predicting that probability. For example, as Professor Shapiro himself finds (see his Table 1), at relatively low levels of local and intraLATA usage (measured by outgoing and incoming, or "O&I" minutes), some of the PCS pricing plans compare favorably or dominate the BellSouth price for *comparable* service. My own analysis confirms this finding and provides more insight. For example, as the charts submitted along with my earlier affidavit showed, there are several combinations or zones of local and intraLATA usage for which BellSouth wireline prices are dominated by plans as small in scope as Sprint PCS' 10-Minute Plan and as large in scope as PrimeCo's July 1997 promotional plan. As mentioned above, the more aggressive pricing plans recently announced by Sprint PCS make my earlier conclusion about the probability of switching among BellSouth's low-volume residential customers apply with even greater force now.

14. Since relative price alone is the basis for all these inferences, it is extremely important to understand exactly what is being (and should be) analyzed here. A meaningful assessment of consumer choice among different pricing plans must treat only those prices as variable, and everything else as constant. Therefore, I believe that the set of services for which price comparisons are made should be the *same* between PCS and wireline options. For the purposes of my analysis, I had drawn an equivalence between a combination of local, intraLATA toll, and five vertical services available from BellSouth (the wireline provider) and the bundled PCS service (with comparable, local, toll, and vertical service features) available from Sprint PCS or

PrimeCo (the PCS provider).<sup>11</sup> But drawing such an equivalence in no way implies that, in fact, “all customers would buy BellSouth’s ‘Complete Choice’ package of vertical services if they were to use wireline service.” (Shapiro, at 12, in critiquing that equivalence) I do not believe that *all* residential wireline customers (or even those with low local and intraLATA toll usage among them) will take all five of the vertical features that Sprint PCS, for example, offers. However, in order that the price comparison be conducted on an apples-and-apples basis, it is necessary to determine just how much the same set of services would cost under different pricing plans. Therefore, it is reasonable to conclude that at least for that set of consumers who may wish to subscribe to the bundled set of services available under the PCS option, there *is* a range of usage over which the PCS plan dominates the residential wireless pricing plans. Indeed, while Professor’s Shapiro’s belief that for a large majority of low volume consumers interest in vertical services is limited to fewer than the five offered by Sprint’s PCS plan may be true, it is irrelevant to the comparison I have made. Clearly, residential wireline customers who buy no or few vertical services may have no clear price reason to switch to the PCS option. They are *not* the subject of my quest. My interest, instead, is to determine whether in fact there are some customers who would regard PCS as an equivalent (bundled) service and, therefore, would consider switching to it if the price were right.

15. The non-trivial conclusion here is that PCS is a viable option to at least this consumer segment. Also, I do not accept Professor Shapiro’s apparent premise that the demand for vertical services is related to calling volume. Anecdotal evidence sometimes suggests a surprisingly high level of subscribership to vertical services among consumers who have relatively little local and toll calling.<sup>12</sup> Thus, there is no reason to suppose that the low usage/high vertical services segment is disproportionately small.

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<sup>11</sup> I agree with Professor Shapiro’s point (Shapiro, at 12) that the vertical services offered by Sprint PCS and PrimeCo are not the same. In fact, I had even listed them separately in my earlier affidavit.

<sup>12</sup> For example, PNR & Associates, *National Telecommunications Demand Study, Round 5*, La Jolla, CA, 1994.

**D. The “Average Customer” Profile *Cannot* be Inferred from Professor Shapiro’s Data**

16. Underlying much of Professor Shapiro’s critique of my analysis is the premise that the average Louisiana customer (i.e., the customer with the “average calling pattern”) makes 1627 minutes of local calls and 123 minutes of intraLATA toll calls in a month. This premise is fundamentally flawed and, as a result, much of Professor Shapiro’s analysis that depends on it is invalid as well.

17. First, as Professor Shapiro concedes, the local and intraLATA toll call averages (which he calculated from the 1997 FCC Monitoring Report) reflect a mix of residential and business usage. Despite this, however, he goes on to claim that those averages “provide some estimate of average minutes of use per phone line for purposes of benchmarking the accuracy of NERA’s descriptions of ‘low’ and ‘high’ use customers.” (Shapiro, at 11, fn. 6) In light of his earlier concession, this is a breathtaking leap of faith that Professor Shapiro invites us to make. He never stops to consider whether indeed 1627 local minutes in a month (i.e., over 54 local minutes in a day) *and* 123 intraLATA toll minutes in a month represent the so-called average *residential* customer in Louisiana. It is important that he do so because my analysis of PCS switching probabilities was confined only to residential consumers. By adding business consumers and minutes to the mix, Professor Shapiro not only distorts the framework for my original analysis, he also grossly misrepresents the average minutes of calling that would be relevant to such an analysis. The Appendix to this reply affidavit demonstrates just how far off the mark Professor Shapiro’s averages are.

18. Professor Shapiro also errs seriously in taking these two *independently calculated* averages and regarding them as the calling pattern of the *average consumer*, i.e., he confuses average minutes with the average *customer’s* usage profile. Professor Shapiro calculates average local, intrastate, and interstate minutes of use by dividing total annual minutes of use in Louisiana in each category (from the 1997 FCC Monitoring Report) by 12 to get total monthly minutes, and then further dividing by the total number of lines in Louisiana to get the “average” minutes of use in each category. (Shapiro, Appendix B) He then takes the average local

minutes (1627) and the average intrastate minutes (123) so calculated and concludes that those are the minutes of local *and* intraLATA toll use of the average Louisiana customer. (Shapiro, at 15) That conclusion is wrong for the following reason.

19. The averages calculated by Professor Shapiro are only true on a “standalone” basis.<sup>13</sup> That is, if the question were: “What is the average number of monthly local minutes (business and residential combined) in Louisiana?” the answer would be “1627,” as calculated by Professor Shapiro. Similarly, if the question were: “What is the average number of monthly intraLATA toll minutes (business and residential combined) in Louisiana?” the answer would be “123,” as calculated. However, if the question were: “What is the number of monthly local minutes **AND** the number of monthly intraLATA toll minutes of the average consumer in Louisiana?” the answer is *not*, as implied by Professor Shapiro, “1627 **AND** 123.” The reason for this is that we are more interested in the characteristics of the *joint* (statistical) distribution of local, intraLATA toll, and possibly other minutes of Louisiana consumers than in standalone averages by themselves.

20. Professor Shapiro appears to recognize that “intrastate” and “intraLATA toll” minutes are not always equivalent. (Shapiro, at 14, notes to Table 2) Some intrastate minutes, in fact, are *inter*LATA toll minutes. Therefore, the average intrastate minutes calculated by Professor Shapiro may overstate the average intraLATA toll minutes. Nevertheless, he reports intrastate minutes as “estimated intraLATA minutes.”

21. For these reasons, there may be little to be gained by seeking the mythical “average consumer,” particularly when the usage of that consumer has multiple dimensions, e.g., local, intraLATA toll, interLATA toll, vertical features, etc. If, however, the “average customer profile” must be established for some purpose, it would be more productive instead to model the joint distribution among all those types of calls/services, and to calculate *conditional* averages for each type of call (given values for the other). For example, Professor Shapiro could ask: “What is the conditional average number of monthly intraLATA toll minutes in

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<sup>13</sup> In statistical terms, these are called means of the *marginal* distributions of local and toll minutes.

Louisiana, *given* that the average number of monthly local minutes is 1627?” or “What is the conditional average number of monthly local minutes in Louisiana, *given* that the average number of monthly intraLATA toll minutes is 123?”<sup>14</sup> Obviously, the nature of the conditional average becomes more complicated when additional dimensions of usage (e.g., average number of vertical features, average number of interLATA toll minutes, etc.) are introduced as well; however, the computation of that average remains possible.

22. The bottom line on all this is simply that for Professor Shapiro’s approach of attributing standalone averages for the different types of minutes to the “average consumer” to be acceptable, local intraLATA toll, and other types of minutes must be statistically independent. Without this property, price comparisons for the “average Louisiana customer” (as in Professor Shapiro’s Table 2) cannot be regarded as credible.

23. A second reason for doubting the validity of Professor Shapiro’s use of the average consumer profile is that his selection of the “average” or arithmetic mean is itself ill-advised when the usage distribution (particularly for intraLATA toll) is very highly skewed. It is well known that a significant fraction of residential consumers make *no* intraLATA toll calls, and that the fraction that makes 15 or fewer minutes of such calls in a month is disproportionately large among consumers who make any intraLATA toll calls at all.<sup>15</sup> Given this fact, it is hard to imagine that Professor Shapiro’s depiction of the average Louisiana consumer (and the price comparisons based on that depiction) is even remotely close to the truth. The failure to

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<sup>14</sup> This is not just an arcane statistical point. Indeed, it demonstrates the difficulty of interpreting an “average” when the entity in question has several different dimensions along which it can be measured. Moreover, those dimensions need not be *statistically* independent of each other. For example, the number of local minutes of a residential consumer in Louisiana may depend on the number of intraLATA toll minutes he may have in a month (or *vice versa*). That can happen for a number of reasons. Where unlimited local calling is not possible, e.g., local calls after a certain allowed number of minutes are metered, the consumer’s “budget” for telephone use may force a trade-off between local and toll minutes. Alternatively, the amount of time available (in a day or month) to the consumer to make telephone calls may be limited and force the consumer to choose between making a local call or a toll call at a given time.

<sup>15</sup> For example, in August 1997, of the 370,425 lines in the New Orleans exchange, only 38,412 (i.e., 10.4%) were associated with any intraLATA toll calling and, of these, 27,369 (i.e., 72% of customers who made intraLATA toll calls and 7.4% of *all* customers) had 15 or fewer minutes in that month. Source: BellSouth Telecommunications. Comparable percentages have been found for a demographically similar major metro exchange in Alabama. See the Appendix.

distinguish between residential and business intraLATA toll minutes is thus compounded by the failure to use summary statistics that better capture the highly skewed nature of the intraLATA toll minutes distribution.<sup>16</sup>

24. To summarize, Professor Shapiro's average (i) does not distinguish between residential and business usage and is, therefore, seriously biased upward for a residential consumer, (ii) confuses standalone averages with conditional averages for consumers that make several types of calls, and (iii) does not properly reflect the highly skewed pattern of usage (particularly of intraLATA toll) among residential consumers. To explain any further why Professor Shapiro's price comparisons for the "average Louisiana customer" are baseless would only belabor this point.

**E. The Cost of a PCS Handset is a Sunk Cost and *Cannot* be Included in a Comparison of Wireline and PCS Monthly Usage Prices**

25. Professor Shapiro faults my earlier analysis for failing to take the cost of a PCS handset into account when figuring the cost of PCS service to a wireline consumer. (Shapiro, at 14) To this end, he cites PCS handset costs in the range of \$100-\$200, with lower prices attached to promotional offerings or refurbished handsets.

26. My reason for not including the cost of the handset is simple: it is a *sunk* cost (i.e., an unavoidable and unrecoverable fixed cost) to the consumer and, hence, outside the comparison of the relevant *variable* or volume-sensitive costs of using wireline or PCS services. Consumers may have no control over the extent of the sunk cost (though that may not be entirely true),<sup>17</sup> but they have far more control over the number of minutes of local, toll, and other calls they make. The cost of a PCS handset (incurred once and averaged over a long period of use) is hardly likely to deter a consumer from switching to PCS if, *in the long run*, his

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<sup>16</sup> With highly skewed distributions, the median is frequently a better choice of a standalone average than the arithmetic mean.

<sup>17</sup> Increasingly, cellular carriers are offering their handsets for free or for a minimal charge (with or without service contracts), and the same pattern of "handset giveaways" may permeate the PCS industry. Clearly, PCS providers (like cellular providers before them) are after the lucrative part of the PCS business, i.e., continued PCS service provision to customers.

or her total cost of PCS use (driven primarily by his or her pattern of usage and associated prices) is likely to be less than that of wireline use.

27. Professor Shapiro should agree that wireline services have fixed or sunk costs too, e.g., the cost of a wireline telephone set (with various levels of built-in features) and the cost to have a wireline connection (dial-tone service) established. Once incurred, these costs do not, however, matter for consumer choices regarding the actual level of usage of local, toll, and other services. Also, these costs can easily fall into the same range as that for PCS handsets. Therefore, either Professor Shapiro should include sunk costs of handsets and connections/activations in his price/cost comparisons for both wireline and PCS services, or he should leave them out of both.

**F. The Cost of InterLATA Toll Calls Should *Not* be Included in the Price Comparisons Between Wireline and PCS Services**

28. Professor Shapiro also objects to my exclusion of *interLATA* minutes in the price comparisons contained in my earlier analysis. (Shapiro, at 14) He contends that PCS providers in Louisiana charge both regular long distance charges and airtime fees for *interLATA* calls, whereas wireline users of *interLATA* service pay no additional fees beyond long distance charges. Professor Shapiro's point is, ostensibly, that while the PCS provider assesses an access-like charge on the PCS customer, there is no corresponding charge from BellSouth to its local customer that makes long distance calls. Therefore, he concludes that exclusion of *interLATA* minutes in my price comparisons omitted an important, asymmetric source of cost to the PCS customer. To underscore the supposed seriousness of this omission, Professor Shapiro points out that "the average Louisiana customer makes 230 minutes of interstate *interLATA* calls per month ..." (Shapiro, at 15)

29. I disagree with Professor Shapiro's objections for several reasons. It is worth noting right away that his attribution of 230 minutes of monthly *interLATA* minutes to the "average Louisiana customer" suffers from the same maladies as his profile of that customer based on

local and intraLATA toll minutes. More importantly, Professor Shapiro simply does not carry his analysis far enough and, therefore, fails to recognize certain realities that are germane here.

30. First, while long distance and travel rates presently charged by PCS providers in the New Orleans area may be high relative to those of wireline long distance carriers, there may also be several mitigating factors.<sup>18</sup> For example, long distance carriers frequently assess high surcharges for calling card and other operator services that are comparable to, or exceed, airtime or “roamer” fees (charged by PCS providers) for shorter interLATA toll calls. Such wireline charges on calls placed away from the customer’s primary phone can be avoided by subscribing to PCS service.

31. Second, it is worth exploring the manner in which PCS providers typically assess local or toll charges. Those providers typically charge a constant per-minute rate within their “home” service areas (“HSAs”), irrespective of whether the calls they carry would be classified as “local” or “intraLATA toll” by a wireline provider like BellSouth.<sup>19</sup> For calls made from *within* the HSA to areas outside (or received from outside the HSA), the PCS provider typically charges long distance rates (either peak, off-peak or a flat rate). Finally, for calls made from *outside* the HSA, the PCS provider typically charges a “roam” or “travel” rate for each minute of calling in addition to long distance rates. These rates would need to be compared to rates charged by wireline long distance carriers. The difficulty posed by including interLATA toll calls in the price comparisons is that a call that may be classified as interLATA toll in the wireline business (and is, thus, presently not provided by BellSouth) may, for the same length of haul, qualify as a local or “within HSA” call provided by a PCS provider. Since the purpose of my earlier analysis was, again, to compare the cost to a consumer of selecting the exact same

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<sup>18</sup> In my affidavit, at 7, I had acknowledged precisely this possibility.

<sup>19</sup> The PCS provider is *not* constrained by existing *wireline* local calling area or LATA boundaries. It may choose to set up an HSA in a manner that makes the most business sense. In fact, Sprint PCS’ home service area in the New Orleans major metro area encompasses several BellSouth local calling areas and, is therefore, larger than each of them. This can be confirmed from information available from Sprint PCS’ website, [www.sprintpcs.com](http://www.sprintpcs.com).

list of services/calls from both BellSouth and a PCS provider, obviously it was prudent to omit interLATA calls that BellSouth would not provide.<sup>20</sup>

32. Third, even if interLATA toll calls are included in the price comparisons, there may be several circumstances in which the cost of such calls is actually *lower* under PCS options than the wireline option. For example, an interLATA toll call to which wireline long distance charges would apply could nevertheless be contained entirely *within* a PCS provider's HSA and would, therefore, qualify for standard "local" PCS rates. In these circumstances, clearly the *opposite* of Professor Shapiro's contention would be true: inclusion of interLATA toll calls in the price comparisons would cause PCS to be favored even more. Professor Shapiro makes no effort to compare the magnitude of this price advantage of PCS to the magnitude of additional PCS costs that would result from imposition of airtime fees in addition to long distance charges for calls beyond the HSA.

33. Moreover, the PCS provider only assesses a "roamer" or travel rate if a PCS call is made or received from *outside* the HSA. That charge (50¢ per minute) does *not* apply when long distance calls are made or received from *within* the HSA. Thus, Professor Shapiro's statement that "PCS providers in Louisiana charge per minute airtime fees on interLATA calls *in addition* to applicable long distance charges"<sup>21</sup> is only partially correct and potentially misleading. A wireline interLATA call may not be a long distance call under the PCS option. Further, even if it were and long distance charges applied, the additional roamer fee would apply only if the call were placed or received from outside the HSA.

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<sup>20</sup> It is worth reiterating that my purpose was *not* to compute the cost of the full slate of services *actually* taken by a consumer under different wireline and PCS plans. Instead, it was to compare the consumer's cost of a given bundle of services/minutes under those different plans.

<sup>21</sup> Shapiro, at 14. Emphasis in original.

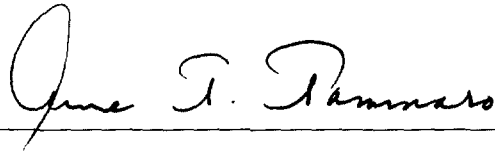
**APPENDIX TO BANERJEE REPLY AFFIDAVIT IS PROPRIETARY**  
**AND NOT FOR PUBLIC INSPECTION**

I declare under penalty of perjury, under the laws of the United States of America, that the foregoing is true and correct to the best of my knowledge, information, and belief.



Aniruddha Banerjee, Ph.D.

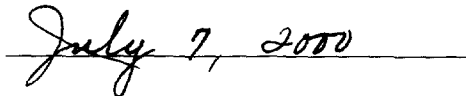
SWORN TO AND SUBSCRIBED BEFORE ME THIS THE 18<sup>th</sup> DAY OF  
DECEMBER, 1997.



NOTARY PUBLIC

State of Massachusetts, County of Middlesex

My Commission Expires:





Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, D.C. 20554

In the Matter of	)	
	)	
Application by BellSouth Corporation,	)	CC Docket No. 97-231
BellSouth Telecommunications, Inc.,	)	
and BellSouth Long Distance, Inc., for	)	
Provision of In-Region, InterLATA	)	
Services in Louisiana	)	

AFFIDAVIT OF D. DAONNE CALDWELL  
ON BEHALF OF BELL SOUTH

STATE OF Georgia  
COUNTY OF Fulton

I, D. Daonne Caldwell, being first duly sworn upon oath, do hereby depose and state as follows:

***Qualifications***

1. My name is D. Daonne Caldwell. I am a Director-Cost Matters in the Finance Department at BellSouth Telecommunications, Inc. (BellSouth). My business address is 675 W. Peachtree St. NE, BSC 30B49, Atlanta, Georgia 30375.

2. I have been employed by BellSouth since 1976. Between 1976 and 1983, I held the position of Outside Plant Planning Engineer in the Network Department. In 1983, I transferred to BellSouth Services, Inc. where I was responsible for the Centralized Results System Database. In 1984, I moved to the Pricing and Economics Department where I developed methodology for service cost studies until 1986 when I accepted a rotational assignment with Bell Communications Research, Inc. (Bellcore). While at

Bellcore, I was responsible for development and instruction of the Service Cost Studies Curriculum including courses such as "Concepts of Service Cost Studies", "Network Service Costs", "Nonrecurring Costs", and "Cost Studies for New Technologies". In 1990, I returned to BellSouth to a position in the Cost Matters organization, which is now a part of the Finance Department, where I was responsible for managing the development of cost studies for transport facilities, both loop and interoffice. Since mid-1996, I have been dedicated to reviewing BellSouth's cost methodology and cost study results. As the Cost witness in the Local Arbitration Dockets and General Cost Dockets, I have been principally responsible for the cost studies for network interconnection, unbundled network elements and local transport and termination.

3. I attended the University of Mississippi, graduating with a Master of Science Degree in Mathematics. I have attended numerous Bellcore courses and outside seminars relating to service cost studies and economic principles.

***Purpose***

4. The purpose of my affidavit is to describe how, in cost studies submitted to the Louisiana Public Service Commission (LPSC), BellSouth developed costs to support its rates for unbundled network elements, interconnection, and collocation in accordance with the Telecommunications Act of 1996 (Act) and to refute allegations made by other parties as to the credibility of the study methodology and results as well as the LPSC's ultimate findings regarding cost-based rates.

5. My affidavit will demonstrate that the costs for interconnection, unbundled network elements, and collocation were developed in accordance with the Act 47 U.S.C. Section 251(c)(3) and 252(d)(1). The relevant elements include local loop transmission

from the central office to the customer's premises, unbundled from switching or other services; local transport from the trunk side of a wireline switch, unbundled from switching or other services and local switching unbundled from transport, local loop transmission, or other services.

6. Permanent cost-based rates were established by the LPSC in Order No. U-22022/22093-A (Consolidated) dated October 24, 1997. This order states on page 5 the following: "The 'Stand Alone' rates of Commission consultant, Kimberly Dismukes, as set forth on Attachment 'A' hereto, are hereby adopted. These permanent, cost-based rates shall replace the interim rates in BellSouth's SGAT and are approved rates for BellSouth's Interconnection/UNE tariff."

7. Ms. Dismukes, the LPSC staff consultant, stated in her testimony filed in this docket on September 22, 1997 the following: "The purpose of my testimony is to evaluate the cost studies presented by BellSouth and to provide the Commission with alternative TSLRIC/TELRIC cost estimates. This included evaluating BellSouth's studies to ensure compliance with the Telecommunications Act of 1996 and the LPSC's local competition regulations." (Appendix C-3 Tab 273 submitted with BellSouth 271 Application in CC Docket 97-231, Testimony of Kimberly H. Dismukes, p. 2) In order to achieve this purpose, Ms. Dismukes conducted an independent impartial review of the cost studies filed by AT&T and BellSouth in Docket U-22022/22093.

8. The result of Ms. Dismukes analysis was a set of proposed rates which she developed using BellSouth's cost studies and models with modifications in several areas. The items she modified were: (1) annual cost factors, (2) annual expense factors, (3) pole and trench sharing, (4) fill factors, (5) labor rates, (6) shared and common cost